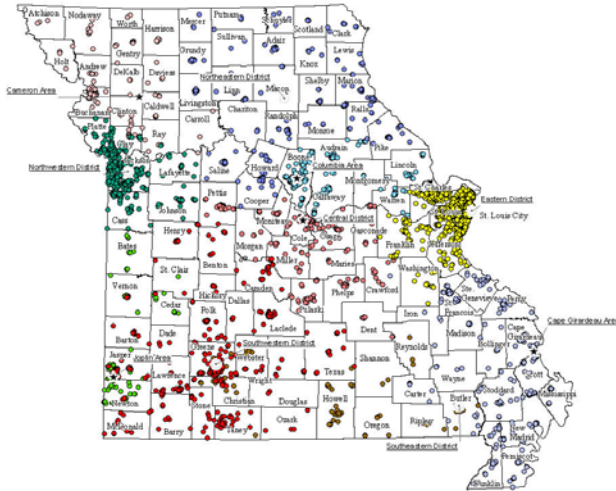
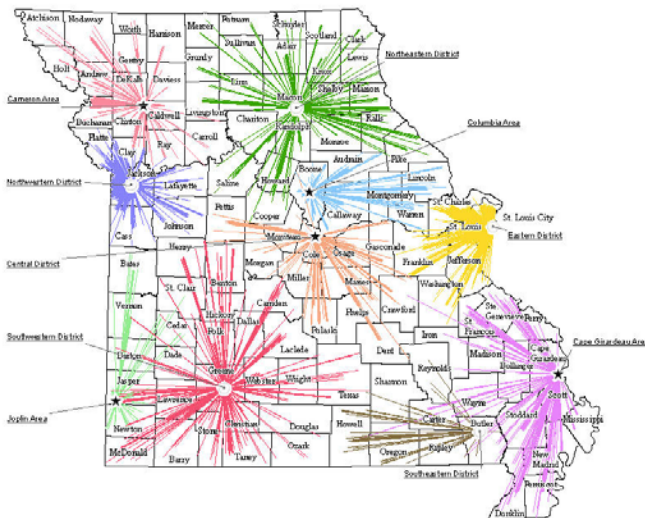


## The Creation of Spider Diagrams

Spider diagrams are an effective way to display the distribution of data between two points. Spiders work best if you are only connecting to a few centers around the state.



Within ArcMap, each day care is shown as a point and given a color based on the base office of the inspector for that site.



Using a spider diagram, day cares are connected to the office from which they are inspected with a line. This creates a visual showing the distance and direction the inspectors travel from their base office.

There are a few requirements before you can create the spider lines.

- 1) You will need an extension called Hawth's Tools. This freeware is available for download from <http://www.spatial ecology.com/htools/>. Install the software on your computer. This tool set contains the tools you need to build the lines. Installation is very straightforward and will not be detailed in this document.
- 2) You will need 2 data layers. There must be some sort of common column of information between the two files. This column will be used to join tables together later on.

### Example

In this example, the two layers are day care locations and the district offices. Day cares inspections are assigned to staff in a particular district office. Lines will be drawn between the base office of the inspectors and each day care they visit. Each record for the day care includes the name of the office where the inspectors are based. So the name of the office was the common information between the two files.

The layer of district offices was created for another purpose. Although this layer contains the name of the district office, the office column was not formatted exactly as it appears the day care layer. You will have to modify this file in order to have a column for joining.

- 1) In ArcCatalog, copy the district office layer into your project directory.
- 2) Create a new empty ArcMap project. Load each file into ArcMap as a layer.
- 3) Open the attribute tables for each layer.
- 4) For the District Office, click Options (located at the bottom of the attribute table) Add Field. In this example the newly added column is named LINK.
- 5) Start Editing on this layer and enter the values needed into this new column. When you have finished be sure and Stop Editing, saving your changes.

Layer #1 - Day Cares

Day Care	Address	City	State	ZIP	Inspected from Office
ABC Day	123 Main St	Cedar Grove	MO	65000	SOUTHWEST
Wee Care	456 Cedar Ln	Springtown	MO	63000	EASTERN
Kids R Us	789 Walnut	Newville	MO	65800	NORTHWEST

Column was added and populated.

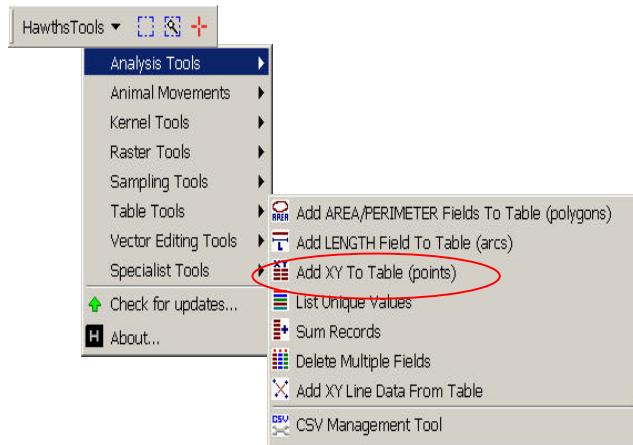
Layer #2 - District Office

Office	Address	City	State	ZIP	Link
Southwest District Office	149 Park Central Sq	Springfield	MO	65805	SOUTHWEST
Eastern District Office	220 S Jefferson	St. Louis	MO	63103	EASTERN
Northwest District Office	3717 Whitney	Independence	MO	64055	NORTHWEST

Note: The district layer was chosen to edit because this layer contained only a few records and was easier to edit.

6) Activate the Hawth's Tools by selecting Tools > Extensions. Make sure the Hawth's Tools extension is checked.

7) Open the Hawth's Tools by selecting View > Toolbars and checking Hawth's Tools.



8) Use Hawth's Tools to add X and Y columns into each layer. You will probably need to add new fields for these coordinates. Specify a name for X and Y columns. Ideally the name should include part of the layer name (see examples below).

Note: Many layers already have a column for latitude and for longitude, but you still need the XY coordinates, since these will

be in the correct map projection.

#### Layer # 1 Day Care

Day Care Name	Address	City	State	ZIP	Inspected from Office	dayCareX	daycareY
ABC Day Care	123 Main St	Cedar Grove	MO	65000	SOUTHWEST	474469.33	4114901.24
Wee Care	456 Cedar Ln	Springtown	MO	63000	EASTERN	739213.59	4277339.75
Kids R Us	789 Walnut	Newville	MO	65800	NORTHWEST	381802.38	4324000.56

#### Layer # 2 District Office

Office	Address	City	State	ZIP	Link	OfficeX	OfficeY
Southwest District Office	149 Park Central Sq	Springfield	MO	65805	SOUTHWEST	474093.25	4118123.33
Eastern District Office	220 S Jefferson	St. Louis	MO	63103	EASTERN	742310.53	4279293.76
Northwest District Office	3717 Whitney	Independence	MO	64055	NORTHWEST	381762.20	4320748.08

9) Exit out of ArcMap, saving all changes.

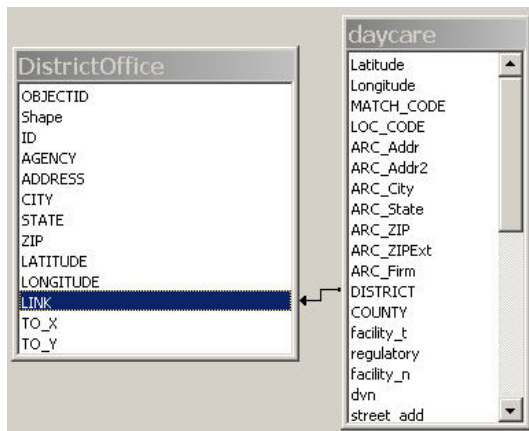
10) Open Access. If you are working in a personal geodatabase, open it with Access. If not, create a new empty Access database in your project directory.

10a) Layers in shape file format should be imported. In Access, import the DBF file from each into a new table. (Remember that shape files are really a set of files, one of which is DBF.) Since these are temporary working files, the names you choose are not important.

10b) If you are working in a personal geodatabase, the information you need is already in the table.

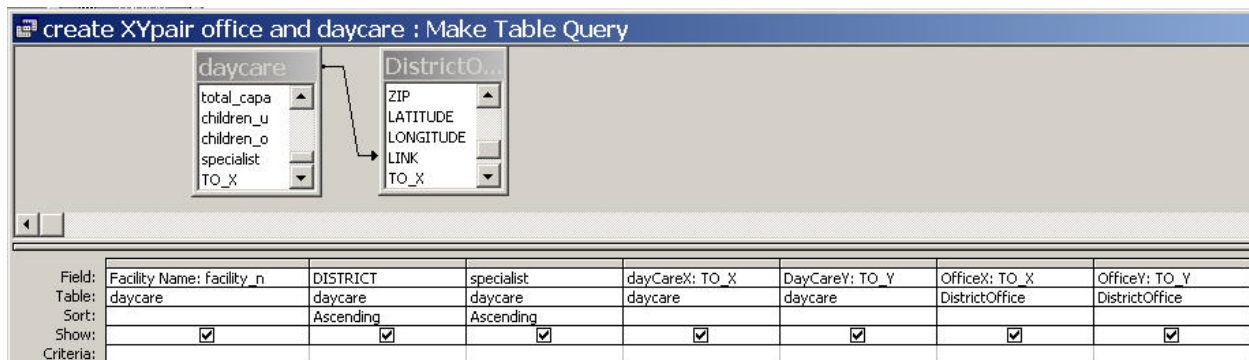
11) Verify that a common column is present between the two tables. Make sure the common data is formatted so that the join/relationship will work (spelling, case etc).

12) Define a relationship between the two files based on the common columns. In this example it will be the "LINK" column in the district office and the "Inspected from Office" in day care. Make sure the join is set up to include all the records in the day care table.



Relationship icon found in toolbar

13) Create a Make Table Query that contains at least the name of the day care (layer 1), its XY and the XY of the district offices (layer 2). Include any other columns you might use for symbology in the output shape file.



Suggested output table name: DayCarePair

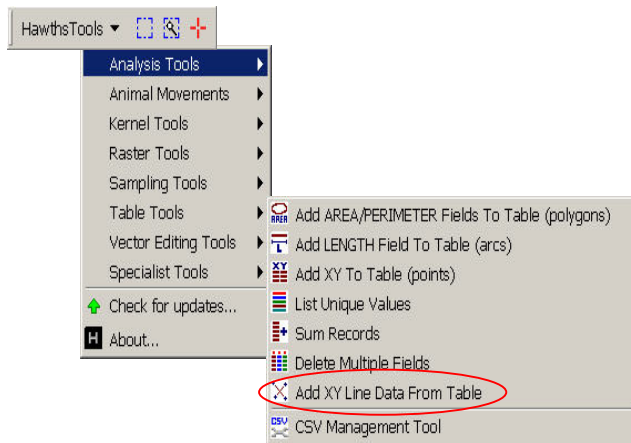
The output table will look something like this:

Day Care Name	District	dayCareX	daycareY	OfficeX	OfficeY
ABC Day Care	SOUTHWEST	474469.33	4114901.24	474093.25	4118123.33
Wee Care	EASTERN	739213.59	4277339.75	742310.53	4279293.76
Kids R Us	NORTHWEST	381802.38	4324000.56	381762.20	4320748.08

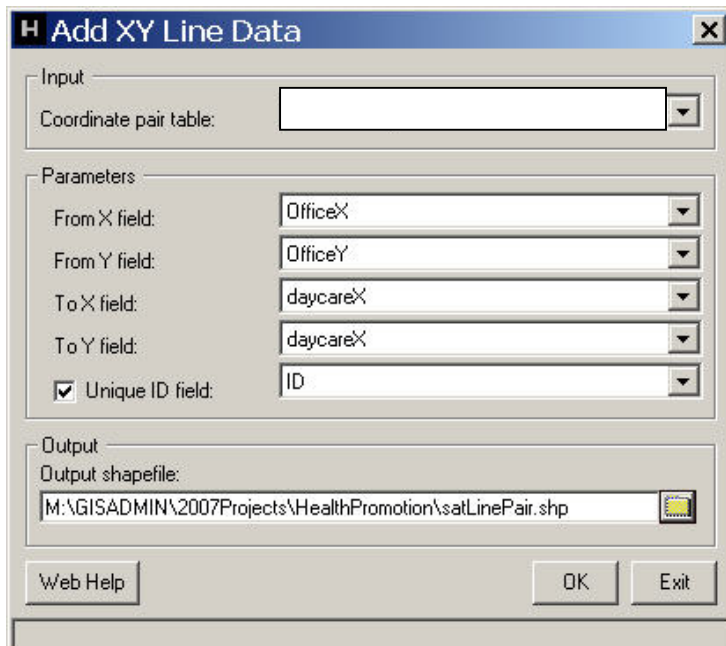
Field Name	Data Type
ID	AutoNumber
facility_name	Text
specialist_name	Text
DISTRICT	Text
daycareX	Number
daycareY	Number
OfficeX	Number
OfficeY	Number

14) The table will need an ID column, so go into the Design View of this table, add a Field called ID and define it as AutoNumber.

## 15) Re-open ArcMap



16) In Hawth's Tools select > Table Tools > Add XY line from table



17) Make sure input XY and output XY is in the right columns. Use ID for unique ID. This will create a new shape file that contains lines between the pair coordinates from each record.

The shape file will not contain all the information from the table, it will only contain the ID number.

18) Join the coordinate pair table to this shape file using ID to give attributes to lines.

The layer can now be symbolized by any of the fields in the table.

Tracy Schloss  
Last Updated 7/21/08